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| NORTH AMERICA INTERNATIONAL PATENT OFFICE (NAIPC) | | | SCHECHTER, ANDREW M | |
| P.O. BOX 506 | | | ART UNIT | PAPER NUMBER |
| MERRIFIELD, VA 22116 | | | 2871 | |

DATE MAILED: 05/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/708,275

Applicant(s)

YU ET AL.

Examiner

Andrew Schechter

Art Unit

2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 August 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 6-12 is/are rejected.
- 7) ☒ Claim(s) 3-5 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>8/16/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: "Liquid crystal display having vacuum layer for isolating heat".

Claim Objections

2. Claim 5 is objected to because of the following informalities: claim 5 should depend on claim 3 rather than on claim 1. Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1, 2, and 6 are rejected under 35 U.S.C. 102(e) as being anticipated by *Fujishiro*, U.S. Patent No. 6,667,567.

Fujishiro discloses [see Fig. 8, for instance] a liquid crystal display comprising a backlight unit comprising an optical film [5, 100, 101, 102] positioned above a light source [41] and at least including a vacuum layer [101], wherein the vacuum layer is used for isolating heat generated by the light source, and a light crystal display panel [2] positioned above the optical film [note that the device is drawn upside down]. Claim 1 is therefore anticipated.

The vacuum layer includes an upper plate [100] and lower plate [102] both formed of transparent materials and enclosing a vacuum, so claim 2 is also anticipated. The transparent materials can be formed of glass [col. 8, lines 51-55], so claim 6 is also anticipated.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Fujishiro*, U.S. Patent No. 6,667,567 as applied above, and further in view of *Ciupke et al.*, U.S. Patent No. 5,461,547, and further in view of *Beardmore*, U.S. Patent No. 5,844,364.

Fujishiro may or may not disclose that the upper and lower plates can be used as a diffusion plate (in Fig. 8, a diffusion plate [5] is shown which might be considered to be

Art Unit: 2871

the upper plate, for instance). Regardless, *Ciupke* discloses [see Fig. 2] such a diffusion plate [31] between a backlight and an LCD panel. It would have been obvious to one of ordinary skill in the art at the time of the invention to have either the upper or lower plate also act as a diffuser, motivated by *Ciupke*'s teaching that this provides light of uniform intensity to back of the LCD [col. 3, lines 19-21]. Also, *Beardmore* teaches that such dual-purpose use is known in an analogous setting; it teaches for instance that an analogous plate can be "frosted, patterned, or modified in some other way to give a more diffuse light source", improving the quality of light sent to the display panel without requiring an additional layer, which would add weight, size, and complexity.

Claims 8 and 9 are therefore unpatentable.

7. Claims 7 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Fujishiro*, U.S. Patent No. 6,667,567 as applied above, and further in view of *Nakamura et al.*, U.S. Patent No. 5,467,417, and further in view of *Beardmore*, U.S. Patent No. 5,844,364.

Fujishiro does not disclose that the upper and lower plates can be used as a prism. *Nakamura* discloses [see Fig. 2] such a prism [6] between a backlight and an LCD panel. It would have been obvious to one of ordinary skill in the art at the time of the invention to have either the upper or lower plate also act as a prism, motivated by *Nakamura*'s teaching that this directs light to the LCD in the range of angles corresponding to the visual angle, producing a brighter and more power efficient display [col. 1, lines 1-52, etc.]. Again, *Beardmore* teaches that such dual-purpose use is known in an analogous setting; it teaches for instance that an analogous plate can be

Art Unit: 2871

“frosted, patterned, or modified in some other way to give a more diffuse light source”, improving the quality of the light sent to the display panel without requiring an additional layer, which would add weight, size, and complexity. Claims 7 and 10 are therefore unpatentable.

8. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Fujishiro*, U.S. Patent No. 6,667,567 as applied above, and further in view of *Ukrainsky*, U.S. Patent No. 4,748,546.

Fujishiro discloses a reflecting sheet [43, 43a] positioned under the light source, but does not explicitly, in the same embodiment, disclose a heat sink positioned under the light source. *Ukrainsky* discloses an analogous backlight unit, with such a heat sink [27] (and reflector). It would have been obvious to one of ordinary skill in the art at the time of the invention to use such a heat sink in the device of *Fujishiro*, motivated by the desire to dissipate the heat generated by the lamps safely and effectively. Claim 11 is therefore unpatentable.

9. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Fujishiro*, U.S. Patent No. 6,667,567 as applied above, and further in view of *Sasuga et al.*, U.S. Patent No. 5,432,626.

Fujishiro is silent on the details of the light emitting devices of the light source. *Sasuga* discloses [see Fig. 23, for instance] an analogous backlight unit using cold cathode fluorescent lamps [BLS]. It would have been obvious to one of ordinary skill in the art at the time of the invention to use such CCFL lamps in the device of *Fujishiro*,

Art Unit: 2871

motivated by them being efficient sources of white light which are commonly used in the art. Claim 12 is therefore unpatentable.

10. Claims 1, 2, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Beardmore*, U.S. Patent No. 5,844,364 in view of *Fujishiro*, U.S. Patent No. 6,667,567.

Beardmore discloses [see Fig. 2, for instance] a backlight unit comprising an optical film [21, 23, 25] positioned above a light source [13, etc.] and at least including a vacuum layer [25] wherein the vacuum layer is used for isolating heat generated by the light source [col. 3, lines 46-49].

Beardmore does not explicitly disclose a liquid crystal display positioned above the optical film; *Beardmore* does disclose using the device "to backlight a transparent display" [col. 4, line 64]. *Fujishiro* discloses [see Fig. 8, for instance] using such a backlight with an LCD panel. It would have been obvious to one of ordinary skill in the art at the time of the invention to do so, motivated by the desire to provide a well-lit LCD device. Claim 1 is therefore unpatentable.

The vacuum layer includes an upper plate [23] and a lower plate [21] both formed of transparent materials, and enclosing a vacuum, so claim 2 is also unpatentable. The upper plate can be used as a diffusion plate [col. 4, lines 65-67], so claim 9 is also unpatentable.

Allowable Subject Matter

11. Claims 3-5 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

12. The following is a statement of reasons for the indication of allowable subject matter:


The prior art does not disclose the device of claim 3, in particular the limitation that the optical film includes a diffusion film, a prism, and a diffusion plate. Claim 3 would therefore be allowable if rewritten appropriately, as would claims 4 and 5 which depend on claim 3.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew Schechter whose telephone number is (571) 272-2302. The examiner can normally be reached on Monday - Friday, 9:00 - 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H. Kim can be reached on (571) 272-2293. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Andrew Schechter
Patent Examiner
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10 May 2005